

a' Cont.  
heteroaliphatic series;

B) an autocrosslinked ester of hyaluronic acid wherein a part or all of the carboxy groups are esterified with the alcoholic functions of the same polysaccharide chain or other chains;

C) a crosslinked ester of hyaluronic acid wherein a part or all of the carboxy groups are esterified with polyalcohols of the aliphatic, aromatic, arylaliphatic, cycloaliphatic, heterocyclic series, generating crosslinking by means of spacer chains;

D) a hemiester of succinic acid or a heavy metal salt of the hemiester of succinic acid with hyaluronic acid or with partial or total hyaluronic acid esters; and

E) a sulfated or N-sulfated hyaluronic acid or a derivative thereof.

30. A biological material comprising:

a) at least one cell type selected from the group consisting of endothelial cells, glandular cells, skin adnexa, germinative cells of hair bulbs, cultivated in the presence of a medium treated with fibroblasts or in a co-culture with fibroblasts; and

b) a biocompatible and biodegradable three-dimensional matrix comprising at least one hyaluronic acid derivative selected from the group consisting of:

A) an ester of hyaluronic acid wherein part or all of the carboxy functions are esterified with alcohols of the aliphatic, aromatic, arylaliphatic, cycloaliphatic and heteroaliphatic series;

B) an autocrosslinked ester of hyaluronic acid wherein a part or all of the carboxy groups are esterified with the alcoholic functions of the same polysaccharide chain or other chains;

C) a crosslinked ester of hyaluronic acid wherein a part or all of the carboxy groups are esterified with polyalcohols of the aliphatic, aromatic, arylaliphatic, cycloaliphatic, heterocyclic series, generating crosslinking by means of

a' Cont.  
partial or total hyaluronic acid esters; and  
E) a sulfated or N-sulfated hyaluronic acid or a derivative thereof.

31. The biological material according to claim 29, further containing keratinocytes, collagen and/or fibrin.

32. The biological material according to claim 29, wherein the endothelial cells are taken from the umbilical vein or from dermis or other tissue wherein blood vessels are present.

33. The biological material according to claim 29, wherein the glandular cells are liver cells or Langerhans islet cells.

34. The biological material according to claim 29, wherein the skin adnexa are sebaceous glands, sweat glands, hair bulbs and the germinative cells are taken from autologous, homologous or heterologous hair bulbs.

35. The biological material according to claim 29, wherein the hyaluronic acid ester is a benzyl ester with a degree of esterification of between 25% and 100%.

36. The biological material according to claim 29, wherein component b) is used in the form of a nonwoven fabric, sponges, granules, microspheres, membranes, films, guide channels, gauzes and combinations of the same with one another.

37. The biological material according to claim 36, wherein component b) is used in the form of a nonwoven fabric.

38. A process for the preparation of a biological material according to claim 29, comprising the following steps:  
i) isolating cells selected from the group consisting of epithelial cells, glandular cells, skin adnexa, germinative cells of hair bulbs and optionally in the contemporaneous

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presence of keratinocytes;

- ii) preparing a biocompatible and biodegradable three-dimensional matrix comprising at least one hyaluronic acid derivative and optionally collagen and/or fibrin;
- iii) seeding at least one type of cells on said matrix optionally in the presence of a medium treated with fibroblasts or in a co-culture with fibroblasts.

39. A process for the preparation of a biological material according to claim 30, comprising the following steps:

- i) isolating epithelial cells from human umbilical vein by enzymatic digestion with collagenase;
- ii) amplification on collagen-treated tissues;
- iii) preparing a biocompatible and biodegradable three-dimensional matrix comprising at least one hyaluronic acid derivative and optionally collagen and/or fibrin;
- iv) seeding said epithelial cells, optionally in association with the cells defined in claim 1 [or 2], on said matrix optionally in the presence of a medium treated with human fibroblasts in primary culture or in a co-culture with human fibroblasts.

40. The biological material according to claim 29, for use in human and veterinary surgery.

41. The biological material according to claim 29, wherein component a) comprises endothelial cells alone or in association with skin adnexa, germinative cells or keratinocytes, in skin transplants.

42. The biological material according to claim 29, for use in skin and scalp transplants.

43. The biological material according to claim 29, for use in skin transplants wherein component a) comprising endothelial cells facilitates the mechanism of neo-vascularization of the transplanted skin.

44. The biological material according to claim 29, wherein component a) comprises germinative cells of hair bulbs, for use in scalp transplants.

45. The biological material according to claim 29, wherein component a) comprises liver cells, for use in liver tissue transplants.

46. The biological material according to claim 29, wherein component a) comprises islets of Langerhans, for use in cases of insufficient insulin production.

47. The biological material according to claim 46, wherein component a) comprises endothelial cells, for use in surgery.

48. The biological material according to claim 47, for use in cardiovascular, aesthetic and oncological surgery.

48. The biological material according claim 47, for use in surgery to enhance the biological process of tissue vascularization.

49. The biological material according to claim 29, for the screening of medicaments or toxic substances.

50. The biological material according to claim 29, as a support for gene transfection.

51. The biological material according to claim 50, as a support for gene transfection.

52. The biological material according to claim 29, further containing keratinocytes, collagen and/or fibrin.

53. The biological material according to claim 30, wherein the endothelial cells are taken from the umbilical vein or from dermis or other tissue wherein blood vessels are present.